

New Claims

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ART 34 AMDT

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1. Pumping apparatus (1) with a peristaltic drive
5 device (3) for pumping a medium through a line (4)
having at least one compressible portion,
containing a one-piece shaft (10) with cams
arranged so as to be offset with respect to one
another and with attached lamellae (14), positive
10 guidance for the lamellae (14) being provided,
characterized in that the cams are cam segments
(13), the shaft (10) is essentially without a core
shaft and essentially without a continuous core
region, and the ratio between the lamella height
(c) and lamella stroke (h) is about 4:1 or less.
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2. Pumping apparatus (1) according to Claim 1,
characterized in that the shaft (10) has a thin
continuous core region (22), in particular a
continuous core region (22) with a diameter of
20 below 3 mm.
3. Pumping apparatus (1) according to one of the
preceding claims, characterized in that a
counterpressure plate (18) for applying the line,
25 in particular a hose (4), and for supporting the
pressure exerted on the line or the hose (4) by
the lamellae (14).
4. Pumping apparatus (1) according to Claim 3,
30 characterized in that the counterpressure plate
(18) is sprung within a housing of the pumping
apparatus (1) by means of one or more springs (19,
23, 26), in particular by means of barrel springs
(23), leaf springs (26) or another type of spring.
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5. Shaft (10) for a pumping apparatus (1) with a
peristaltic drive device (3), in particular
according to one of the preceding claims, the
shaft being formed in one piece, characterized in

5 that the shaft (10) is designed without a core shaft and essentially without a continuous core region or, for an increase in stability, with the thin continuous core region with a diameter of below 3 mm and having cam segments (13) offset with respect to one another and contiguous to one another.

10 6. Shaft (10) according to Claim 5, characterized in that an odd or even number of cam segments (13) is provided.

15 7. Shaft (10) according to Claim 5 to 6, characterized in that the cam segments (13) are offset with respect to one another in such a way that only one cam segment is at a maximum distance from an imaginary center line (21) of the shaft (10).

20 8. Shaft (10) according to Claim 7, characterized in that a uniform offset (α) of the cam segments (13) is provided, in particular an offset of 40° in the case of nine cam segments (13).

25 9. Shaft (10) according to one of Claims 5 to 8, characterized in that the shaft (10) consists of a plastic, in particular of a carbon fibre plastic, of a glass-fibre-reinforced polymer or of another stable and dimensionally consistent material.

30 10. Lamella (14) for a pumping apparatus (1) according to one of the preceding claims, with a passage orifice (15), characterized in that the passage orifice (15) corresponds in longitudinal direction
35 essentially to the outside diameter of a cam segment (13) of a shaft (10), to which the lamella (14) can be or is attached moveably, and in the transverse direction essentially to the outside

diameter (d) circumscribed by the rotating cam segments (13).

- 5 11. Lamella (14) according to Claim 10, characterized in that the passage orifice (15) is essentially a long hole with a greater extent transversely to the longitudinal direction of the lamella (14).
- 10 12. Use of the pumping apparatus (1) according to one of Claims 1 to 4 as an infusion pump or transfusion pump for dialysis or as a hose pump for other medical purposes.